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DISSEMINATED INTRAVASCULAR COAGULATION. A CAUSE OF MATERNAL MORTALITY IN PERI-PARTUM PATIENTS

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ABSTRACT

Objective: To find out maternal risk factors causing Disseminated Intravascular Coagulation (DIC) and prevention of mortality.

Material and methods: This cross sectional study was carried out on a sample population of 23 patients out of total patients numbering 5726. Sampling method was convenient sampling i.e. patients visiting Khyber Teaching Hospital during peri partum period. A questionnaire was designed with questions regarding Post-Partum Haemorrhage (PPH), amniotic Fluid Embolims, Abruptio placentae, Eclampsia, Septic Abortion, Burns, History of Surgery, Heat Stroke, transfusion reaction and snake bites. The study was carried out from January 2012 to January 2013. Multi-disciplinary approach was carried out according to international protocols. Diagnosis of DIC was based on a clinical assessment as well as global DIC screening. Specific treatment was carried out which included fluid therapy, Fresh Frozen Plasma (FFP), red cells concentrate and platelets concentrate in addition to correction of underlying obstetric disorder.

Results: A total of 23 sample population was treated. Out of these 15(65.2%) patients recovered and 8(34.7%) died giving a death rate of 34.7%. This study helped us to develop standard operating procedures for reduction in maternal mortality rate.

Conclusion: Prompt termination of pregnancy, together with supportive measures of necessary to reduce the complications of Disseminated Intravascular Coagulation.

Key Words: Disseminated, Intravascular, Coagulation, peripartum, maternal, mortality.

INTRODUCTION

Disseminated intravascular coagulation (DIC), an acquired thrombo hemorrhagic disorder, is associated with inappropriate simultaneous activation of coagulation and fibrinolytic system which leads to depletion of platelets and coagulation factors and excessive thrombolysis. It is a secondary phenomena resulting from an underline disease state.

The most common obstetric conditions associated with DIC are placental abruption, pre-eclampsia – eclampsia, amniotic fluid embolism, retained dead fetus, placenta previa and sepsis[1]. Acute clinical manifestations of DIC are variable and include bruising, hematuria, mucosal oozing, prolonged bleeding at venipuncture or surgical sites. Uncontrolled hemorrhage and wide spread fibren deposition may affect any major organ system[2].

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Diagnosis of obstetrical DIC is challenging because pregnancy is a hypercoagulable state and almost all coagulation factors are elevated in pregnancy. This means that consumption of coagulation factors may elevate Prothrombin Time (PT) and Activated Partial Thromboplastin Time (APTT) but be still with in normal non pregnant ranges[3,4].

MATERIAL AND METHODS

This was a cross sectional study which was carried out in the department of Obstetrics and Gynaecology Unit of Khyber Teaching Hospital, Peshawar from January 2012 to January 2013 on a sample population of 23 patients out of total patients numbering 5726. Sampling method was convenient sampling i.e. patients visiting Khyber Teaching Hospital during Peri Partum period. All those patients who fulfils the inclusion criteria, of Post Partum Haemorrhage like, amniotic fluid embolism, Abruptio placentae, eclampsia, septic abortion were included in the study. Those patients who were exposed to burns, with history of other than gynaecological surgery, heat stroke, transfusion reaction and snake bite were excluded from the study. All the relevant informations were recorded on a performa.

Multi-disciplinary approach was carried out according to international protocols. Diagnosis of DIC was based on a clinical assessment as well as global DIC screening (PT, platelets count, fibrinogen, fibrin related markers). Depending on the DIC screening score and clinical presentation, patients were categorized into severe Acute DIC and sub-Acute groups. Specific treatment was carried out which included fluid therapy, FFP, red cells concentrate, platelets concentrate, in addition to correction of underlying obstetric disorder. Calculation were done using SPSS version 10.

RESULTS

Total number of Peri partum DIC patients were 23 out of 5726 delivery and post partam hospitalizations, giving a frequency of 0.4%. Acute and sub-acute cases were categorized and underlying obstetric causes are given in Table 1 and 2. Maternal mortality in acute versus sub-acute Peri partum DIC is given in Table 3.

DISCUSSION

DIC in peri partum period is almost invariably secondary to underlying obstetric disorders and should be considered a hematologic emergency. Obstetric disorders such as placental abruption, Pre Eclamsia, sepsis and Trauma are by their own, leading causes of direct maternal death. Addition of DIC increases the risk of mortality far beyond that associated with primary disease. In our study the prevalence of DIC was 4/1000. It is higher as reported from USA i.e. 1.2/1000 delivery hospitalization[4] but lower than as reported from Quetta, Pakistan, i.e. 7/1000[5]. In a study by Humaira Naz et al.[7], the DIC was diagnosed in 0.92% of patients and risk factors were elcampsia (70%), abruptio placenta (17.5%), septicemia (17.5%), pancytopenia (2.5%), and in 2.5% of cases it was secondary to haemorrhagic shock due to placenta previa. Whereas in our study abruptio plecenta was in 26.6%, uterine rupture in 20%, pre eclampsia in 33.33%, placenta previa in 6.66% and septicemia in 6.66% and retained placenta in 6.66% showing a difference in septicemia, due to excellent aseptic measures in our department. In a study by Bing H Tang[8], there was almost no co-relation between age and prothrombin time, like in our study we do not find any deranged prothrombin time.

Table 1: Causes of Acute DIC In Peri Partum Patients at Admission (N =8)

Causes	No. with percentage
Cesarean delivery and PPH (referred as post op in shock)	2 (25%)
Obstetric-Hystertcomy and PPH (referred as post op in shock)	2 (25%)
Uterine Rupture and PPH	2 (25%)
Placental Abruption and pre Eclampsia	2 (25%)

Table 2: Causes Of DIC In Peri partum Patients Who Survived (N= 15)

Causes	No. with percentage
Abruptio Placentae	4 (26.6%)
Uterine rupture	3 (20%)
(Pre) eclampsia,	5 (33.33%)
Placenta Previa	1 (6.66%)
Septicemia	1 (6.66%)
Retained placental pieces	1 (6.66%)

Table 3: Maternal Mortatlity In Acute Versus Subacute Peripartum DIC

Groups	Maternal deaths	Recovered cases	Total
Acute DIC	6	2	8
Subacute DIC	2	13	15

P value equals 0.0062, which is statically very significant.

The high mortality (75%) in acute category of DIC in our study can be explained by the fact that 4 out of 6 cases were brought to the hospital in state of irreversible shock and being operated upon in other institutions, dying within 6 hours of admission. The other two cases in acute category had uterine rupture with irreversible shock and did not recover from anesthesia for laparotomy. Where as in studies by different authors[9,10], it was concluded that despite reanimation and transfusion with blood products, surgical treatment was necessary in emergency and all the such patients should be remain admitted in intensive care unit for atleat about 3 days.

Peri partum Hemorrhage is a common cause of DIC in pregnant women. It is estimated to account for 1-5 percent of cases of DIC in high resource countries and the proportion is even higher in low resource countries. In our study peri partum hemorrhage was a cause of DIC in 6 out of 8 cases (75%) of acute DIC. Maternal mortality in acute DIC was 75% compared to 13% in sub-acute category. Overall maternal mortality for peri partum DIC was 34.78%. DIC is having a very high mortality rate and mortality of more than 70% is reported in different studies[11,13]. In our study not a single case of amniotic fluid embolism was noted whereas in studies by Mathlouthi[10] N and Rabia Azmi[12] et al.,

showed 90% and 75% deaths of DIC were because of amniotic fluid embolism.

CONCLUSION

In order to reduce maternal morbidity and mortality, the underlying cause of pregnancy related DIC should be corrected. In most cases it means prompt termination of pregnancy together with supportive measures as necessary (i.e. fluids, plasma or platelets replacement).

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